1. NSRL PROPOSAL NUMBER: ***Date Submitted:*** 8/18/05

Expected Start Date: Spring 2006

2. EXPERIMENT TITLE:

Radiation Testing of Tissue-Equivalent Plastic

3. CONTACT PERSON FOR QUESTIONS REGARDING THIS EXPERIMENT:
Name of person: Christopher J. Sweeney
Phone Number (at home institution): (617) 353-0247
Email: csweeney@bu.edu

ATTACHMENT

9.2.1.g NSRL Users Experimental Safety Approval Form

NSRL USERS EXPERIMENTAL SAFETY APPROVAL FORM

You must complete this form for all work listed on the proposal, not for any individual runs.

4. EXPERIMENTERS *who will be working on this project. Indicate Principal Investigator. All experimenters must satisfy all training requirements for the experiment.*

First Name	Last Name	Affiliation	Phone	Email
Harlan	Spence (P.I.)	Boston Univ.	(617) 353-7421	spence@bu.edu
Christopher	Sweeney	Boston Univ.	(617) 353-0247	csweeney@bu.edu
E. Lawrence	Kepko	Boston Univ.	(617) 353-7410	lkepko@bu.edu
Justin	Kasper	M. I. T.	(617) 253-7611	jck@mit.edu
Joseph	Mazur	The Aerospace Corp.	(703) 324-8915	joseph.mazur@aero.org
J. Bernard	Blake	The Aerospace Corp.	(310) 336-7078	jbernard.blake@aero.org

5. TASK AND HAZARD ANALYSIS: Discuss what you will bring to BNL, how it will be shipped here, what special precautions you will take when using it and transporting it on-site, and how it will be disposed of and/or shipped back to your home institution. Include Radioactive items, materials and samples, hazardous materials, as well as non-radioactive and non-hazardous items and materials.
We will be shipping our support electronics (*e.g.*, spectroscopy amplifiers, multichannel analyzer, *etc.*), a sample of tissue-equivalent plastic, and the engineering model for the CRaTER instrument engineering

model. They will be shipped by truck freight. None of these items contain any biological, chemical, or radiaoactive materials. Upon completion of our testing, these materials will be shipped back from Brookhaven by truck freight.

6. MATERIALS TO BE USED Please use only the minimum quantity and the least hazardous chemicals available to do your experiment successfully:

6a) CHEMICALS: List all chemicals including toxic and experimental substances, controlled substances, compressed gases, and cryogens:

Name of Chemical	Quantity	Storage Location (Medical, NSRL, Biology)	Location of use (Medical, NSRL Biology)	Return to Home Institution?	Special Handling Requirements
none					

6b) BIOLOGICALS: List all animals, cell lines (and note if they are primary or not), blood or body fluids, viruses, viable bacteria, or toxins of biological origin. Please list detailed description of organisms below. You may need Institutional Animal Care and Use Committee (IACUC), Institutional Biosafety Committee (IBC) and/or Institutional Review Board (IRB) Approval:

Name of Biological	Description	Disposal method at BNL or note return to Home Institution	Special Handling/Approval (IRB, IBC)
none			

6c) RADIOACTIVE MATERIALS: List any radioactive materials, include any handling of activated materials:

Name	Quantity	Storage Location (Medical, NSRL, Biology)	Location of use (Medical, NSRL Biology)	Disposal method at BNL or note return to Home Institution	Special Handling Requirements
none					

7. *EQUIPMENT: List any equipment you will bring to BNL. Please list where you will use it (NSRL, Medical, Biology). Listing of Potentially Hazardous Equipment Must Include: electric equipment not UL approved or certified to meet National Electrical Code, electronic equipment, detectors with flammable gases and flammable gas targets, flammable-combustible (e.g. plastic detector materials), samples, reactive metals etc, lasers, ovens, pumps, cryostats, pressure devices or pressure vessels, vacuum windows or vacuum vessels, liquid or gas mixing or containment systems, UV lamps, high-temperature devices, material handling devices, solenoids, spectrometer magnets, structures supporting heavy loads, compressed air or gas systems, RF or microwave devices, sound systems or noise greater than 85 dBA, items that emit liquids, gases, or vapors from the experiment, welding or burning tools, or any equipment or activities that require special written procedures by the User.*

Description: As indicated above, the only equipment we will transport to and from Brookhaven is a sample of tissue-equivalent plastic, the CRaTER engineering model, and our support electronics. The tissue-equivalent plastic is inert. The engineering model is a custom design, and therefore does not meet industry standards. However, it will be made to stringent NASA standards as detailed in the accompanying CRaTER proposal. The engineering model comprises only an aluminum support structure, tissue-equivalent plastic, silicon detectors, and electronics based on Amptek A250 and A275 microchips. No high voltage or other hazard is presented by the engineering model. Our support electronics are all U.L. listed components---nuclear instrumentation bin modules commercially produced by Ortec, Canberra, and Berkeley Nucleonics.

8. WASTES: (including clean waste, hazardous waste, radioactive waste, medical/biohazard waste.)

Name of Waste	Description	Anticipated quantity	Disposal Method
none			

9. USER COMMENTS:

No hazards---biological, chemical, or radioactive---are presented by our proposed experiment.

10. ***TRAINING: Training requirements for each experiment will be posted on the NASA website. Listed below are the specific training requirements based on the work to be performed.***
For return users, you may check your training status on-line at http://training.bnl.gov **to see which courses you need to complete again.**
All NSRL Users must complete the following 4 courses:

1. **C-A Radiobiology Users Training**
   - Initial training - Classroom training necessary - contact userscenter@bnl.gov for schedule.
   - Renewals- every 24 months, complete Challenge exam at http://training.bnl.gov (study guide is available), or repeat classroom training.

2. **Radiological Worker 1**
   - Part 1 can be done on-line at http://training.bnl.gov
   - Part 2 consists of a challenge exam to be taken at BNL. Study guide is at http://training.bnl.gov

   (Note: If you are from another DOE facility you can apply for DOE Radiation Worker Reciprocity by completing exemption form**).**
3. **Cyber Security online at** http://training.bnl.gov**.** Initial training only (no requalification required)
4. **Guest Site Orientation online at** http://training.bnl.gov**.** Initial training only (no requalification required)

In addition, ALL participants using laboratory facilities in the Medical or Biology Departments must complete the following.
If you are using chemicals, as noted in this experimental safety review, you must complete the following on-line courses

- Laboratory Standard (required every two years)
- Hazardous Waste Generator (required annually)
- Regulated Medical Waste Generator Training (initial training only)

If you are using Human blood, tissues, or primary human cells:

- Bloodborne Pathogens Training (required annually)

If you are using cryogens (liquid nitrogen or helium), you must complete the following on-line course:

- Cryogen Safety Awareness (initial training only)

If you are using compressed gases, you must complete the following on-line course:

- Compressed Gas Safety (initial training only)

If you are using dispersible Radioactive Materials such as tagged cells, or will handle your samples while activated from beam exposure, you must complete the following:

- Radioactive Waste Generator (HP-RADIGEN) available on-line
- Benchtop Dispersibles Training (required every two years) - contact Ann Emrick, emrick@bnl.gov, to arrange for course)

If you are using Animals:

- Laboratory Animal Training (LAT I): will be administered upon arrival. (Initial training only, no requalification)

If you are using Controlled Substances:

- Controlled Substance Awareness
- DEA Background Check: Contact Medical Chairman's Office at (631)344-3715

ALL USERS MUST READ AND SIGN THE LOW HAZARD-SKILL OF THE CRAFT WORK PLAN SPECIFIC FOR THE EXPERIMENTAL RUN THEY ARE ATTENDING

Experimental Spokesperson or Principal Investigator: Harlan E. Spence
Print

_____ _____ 8/19/05
Signature Date

Life Sciences Experimental Review Committee Designee Approval:

C-A Experimental Safety Review Committee Designee Approval:

Environmental Safety &Health Staff Comments and Requirements:

Approval Date